Society Proceedings

THE AMERICAN NEUROLOGICAL ASSOCIATION

The Thirty-fourth Annual Meeting held at the College of Physicians of Philadelphia, May 20, 21 and 22, 1908

The President, Dr. Charles W. Burr, in the Chair

(*Continued from p. 534.*)

A SPECIAL DIAGNOSTIC PHENOMENON IN THE ATTITUDE OF THE HEAD IN CEREBELLAR DISEASES. REPORT OF SIX CASES, FOUR OF WHICH CAME TO AUTOPSY

By Alfred Gordon, M.D.

In cerebellar diseases the head not infrequently assumes a definite position; in the majority of cases it is inclined towards the side of the lesion; tumor, hemorrhage, etc. This symptom, together with cranial nerve involvement, changes in the reflexes, hemiasynergy, tendency to fall towards the same side, constitutes a symptom group, characteristic of cerebellar diseases. Dr. Gordon has observed that shortly after the beginning of cerebellar disease, or some time later, or else shortly before death, the head changes its position: instead of remaining inclined to the side of the lesion, it turns to the opposite side. Then the least voluntary or involuntary attempt to turn the head to its original position provokes intolerable pain and vertigo which are immediately relieved by permitting the head to return to its newly acquired position. Dr. Gordon observed this phenomenon in six instances. Four cases came to autopsy and the tumors were found on the side toward which the head was originally inclined. Two cases were only clinical, and in them the phenomenon was the same as in the first four. The importance of this manifestation is evident. If for example other symptoms point to a lesion of the left side of the cerebellum, but the head is inclined to the right and an attempt is made to turn the head to the left with the result of increase of pain and vertigo,—it is to be presumed that the lesion is on the left side. This phenomenon will also be useful for diagnosis in cases in which other symptoms are wanting or are very slight.

While four anatomico-clinical cases are not sufficient for generalization, they deserve attention from a diagnostic standpoint.

Discussion

Dr. Joseph Collins asked in what way the position of the head Dr. Gordon described differed from that pointed out by Hughlings Jackson twenty-eight years ago and which has since been corroborated by all writers on disease of the cerebellum; and more than that, how it differed from the statements of Bruce, who has recently reviewed the works of Jackson, and who says in his last contribution to the subject that this position of the head which Dr. Gordon describes is quite pathognomonic. Wherein should we give position of the head greater diagnostic significance than we have been accustomed to give it?

Dr. William C. Krauss said he had seen cases in which this position of the head was present in a remarkable degree. In one case choked disk came on late in the course of the disease and on the side opposite to the position assumed. In the second case with all the symptoms of cerebellar disease present, an operation was performed and no tumor found in the cerebellum. On autopsy a tumor was discovered pressing on the superior cerebellar peduncles cephalad of the tentorium producing the same symptoms as if situated in the cerebellum itself.

Dr. M. Allen Starr speaking of the staggering as indicative of the situation of the tumor, said some twelve or fourteen years ago he made a collection of forty cases of cerebellar tumor in order to try to determine whether the direction of the staggering gave any indication as to the side of the tumor. In one third of the cases the patient staggered toward the tumor and in two thirds of the cases he staggered away from the tumor. That statement has been repeated in many subsequent articles, and he has taken pains to keep track of cases of cerebellar tumor published since. He has now about 100 cases and has come to the conclusion that absolutely no conclusion can be reached in regard to the direction of the staggering as an indication of the position of the tumor, and he thinks that is borne out by Dr. Gordon's statements, because in two cases the patient staggered to the left and in two to the right.

Dr. Joseph Fraenkel said that forced movements and forced attitudes of the head or extremities are commonly observed in cerebellar disease. The general diagnostic value of these motor phenomena is undisputed and has been frequently described in literature. More debatable, and hardly yet to be used as a guide, is the value of these phenomena as indication of the exact location of a lesion. The opinions concerning this question, to be found in the literature, are still very contradictory. The physiological literature of this question makes statements quite contradictory to those found in the clinical literature. And even the latter is by no means unanimous. To Dr. Fraenkel it appears that the contradictions are explained by the different nature of the lesion—irritative or depressant; by the different location—in the vermis, on the cortex, or subcortical, and finally, by the varied duration of a lesion—whether at the beginning, when compensatory efforts are developing, or when fully established.

Dr. Frank R. Fry, stated that Dr. James Collier in *Brain* in 1904 had made an observation to the effect that often intracranial tumors of large size or of long duration were capable of pushing the cerebellum down and backwards until portions of it and the pons were actually engaged in the foramen magnum, even to the extent of being indented by the margin of the foramen. In this way false localizing signs were produced in some cases. Doctor Fry in 1905 had reported to the association an instance of this kind, where a large frontal-lobe tumor had by pressing on the cerebellum produced very complete symptoms of a cerebellar tumor. (JOURNAL OF NERVOUS AND MENTAL DISEASE, October, 1905.)

Dr. Philip Coombs Knapp said that in a good many cases of tumor in any part of the brain a change in the position of the head will cause an increase both in dizziness and headache. A patient with tumor of the occipital lobe, for example, had a very peculiar way of rising from the bed, because, unless he moved in a particular way he would have a very severe attack of headache and dizziness. His experience had usually been that the headache and dizziness were increased, when the head was turned to the side opposite the tumor, so as to bring the tumor higher than the rest of the brain, although the opposite rule occasionally obtained. In cerebellar growths, which ordinarily are attended by a greater degree of dizziness than growths in the cerebrum itself, these symptoms might be exaggerated.

Dr. J. Ramsay Hunt stated that he had observed fixation of the head in cerebellar lesions in two cases of softening, in which the patients had recovered. He regarded it as an attempt to fix the head and in this way to compensate for the loss of cerebellar function. He has, however, never been able to determine any fixed position that might be used as a localizing factor in the cerebellum itself. He thinks that the position of the head as a localizing factor in tumors especially should be used with a great deal of care, because such a fixed position of the head may be produced by meningeal irritation alone; which is so common a symptom with all organic affections of the posterior fossa.

Dr. C. E. Beevor thought the position of the head so very uncertain that it is not of very much value for diagnostic purposes. In a very large number of cases there is no characteristic position of the head. Pressure on the medulla oblongata and pons may occur, and in some of the cases Dr. Gordon had recited Dr. Beevor gathered that the Babinski phenomenon was present; that is a phenomenon which he thinks we can never get from pure cases of cerebellar disease, therefore in some of Dr. Gordon's cases the condition present must have been something else.

Dr. John H. W. Rhein stated that Schmidt had described a symptom-complex which he called "Schmidt's Syndrome," consisting of the development of dizziness and vomiting when the patient would lie on the side opposite a cerebellar lesion. These symptoms disappeared if the patient turned over.

Batten, apropos of a case of cerebellar tumor, concluded that special attitudes were not rare in cases of cerebellar lesion. He observed that the ear was drawn to the shoulder opposite the lesion, and that the face was turned to the side of the lesion. He did not believe this was pathognomonic.

Dr. Rhein was convinced that the positions of the head were not pathognomonic of cerebellar lesions. In two patients under his recent observation the head was retracted. In one of the cases there was tumor of the middle fossa with no involvement of the cerebellum, and not sufficient hydrocephalus to cause this symptom; and in the other case there was hydrocephalus with cystic formation at each cerebello-pontile angle.

Dr. T. H. Weisenburg said he had recently collected and published a number of cases of cerebellar tumor. In none was the so-called cerebellar attitude of the head a diagnostic feature. In two of his cases the head was held in the so-called cerebellar position but this was due to diplopia. When it was corrected the attitude promptly disappeared.

Dr. Gordon, in closing the discussion, stated that he wished to emphasize in his paper that in many cases of cerebellar tumors the head is inclined to one side and frequently the lesion is on the side to which the head is inclined. He observed in two clinical and four anatomico-clinical cases watched for a long time, that at a certain period of the disease the head turned to the opposite side. He also noticed that when he attempted to put the head on the opposite side to which the lesion pointed there was increase of vertigo and headache. The patient instinctively turned his head to the opposite side. The turning of the head to the opposite side Dr. Gordon thought is novel and deserving attention, as it may be of a localizing value. He gave no explanation of the phenomenon.

Dr. B. Sachs read a paper entitled: Two Cases of Aphasia Relieved by Operation and their Bearing on Modern Theories of Aphasia. (To be published in this JOURNAL.)

DISCUSSION

Dr. H. H. Hoppe said that he wished to report a similar traumatic case of aphasia in which the aphasia became progressively worse. The case was the result of a depressed fracture under the temporal muscle which was overlooked at the time of the accident, and two or three months later the man presented a mild form of sensory aphasia. He was a German who had acquired the English language and had lost his power to name things in German, but not in English, and during the next few months he lost progressively his power to name objects in English, therefore it was determined to trephine. Over the seat of the injury there was found a little spicule of bone around which a cyst had developed, not larger in size than a hazel nut. The patient recovered from the operation but never completely regained his use of the German language; there was always some defect in naming objects.

Dr. Spiller presented a brain from a case of motor aphasia in which the lesion implicated Broca's area and the anterior part of the island of Reil without extending into the lenticular nucleus. Only to this extent was Marie's lenticular zone involved. (To be published in this JOURNAL.)

Dr. Joseph Collins said that so far as any evidence was presented by Dr. Sachs that he could comprehend the first case was not a case of aphasia at all, but a case of anarthria. Dr. Collins does not understand that a man can have aphasia who has a full and undisturbed capacity of internal speech, nor does he recall that anyone else holds that view. If this man had anarthria and agraphia he probably had a lesion of that part of his cortex which sends motor neurones down through the internal capsule which go eventully to the periphery of the body, and especially to those peripheral parts that are devoted to externalizing speech. Nor is Dr. Collins at all convinced, even if he thought it were a case of aphasia, that any evidence had been offered to show that the lesion did not affect the lenticular zone of Marie. Given a case which has a hemorrhagic disorder of the cortex which results in the formation of a cyst he sees no reason why there should not be similar hemorrhagic exudation or destruction in the subcortical region which would involve Marie's lenticular region. But he sees no reason for assuming that there was or was not such subcortical lesion, for to his mind it was not a case of aphasia. Dr. Collins said it was evident from the examination of the specimen and of the photograph from Dr. Spiller's case that the lenticular zone was affected.

Dr. Fraenkel said that by courtesy of Dr. Elsberg he had occasion to see the patient spoken of by Dr. Sachs. The patient showed what he believed to be, undoubtedly, a "dysphasic" and not a "dysarthritic" disturbance of speech, in the sense in which these terms have been used heretofore.

The patient did not formulate "crippled" words; he did not formulate any beyond "olis" and "easy," and these were correctly built and enunciated.

The speaker was not satisfied from the short examination, that there was no disturbance of the understanding of speech.

The case under discussion teaches us that, for the present, and for clinical purposes, the traditional methods of locating disease on the cortex in the speech area are still reliable.

Dr. Adolf Meyer said it would seem very desirable in a discussion of this kind to distinguish theoretical problems of aphasia from the purely practical issues and not to go into the position where false theoretical views might be excused on the ground that they seem to tally in cases which really bring no direct proof one way or another. If we speak of places of maximum vulnerability of certain speech mechanisms we are always on good safe practical ground and that is what has been touched by these cases. If we speak of the aphasia mechanisms in themselves we must have more facts than these cases present. Dr. Meyer thought if we kept these two things apart we could facilitate discussion considerably and especially keep out of mere rehearsal of the claims of Marie and Dejerine, which is always a rather distressing issue at the present time. The case that Dr. Spiller spoke of had a plain involvement of the lenticular zone, although probably not of the lenticular nucleus.

Dr. Sachs, in concluding, said that he did not wish to utilize these cases as a contribution to the difference between Marie's and Dejerine's views and he believed that operative cases cannot be utilized in that way either to support or dispute the theory because we do not know exactly how deep the lesion is and can only determine this on post-mortem table. Fortunately, neither case reached the post-mortem table.

As for Dr. Collins' statement that the first case was not one of aphasia, the speaker remarked that unless we accept everything Dr. Collins says without criticism and disregard everything that other people say, we will have to insist that this is a case of aphasia and not anarthria. This was a case in which speech as such was deficient, the man could not express himself at all, whereas there was every reason to believe that he had an understanding of language. Another point, the only reason why Dr. Sachs believed the lesion did not involve the lenticular zone, or ganglia, was because there was a very brief period of paralysis and every symptom had completely disappeared except the speech disturbance. He could not concede that there can be any serious invasion of the lenticular region without some accompanying paralysis. He thinks when there is speech disturbance pure and simple without paralysis of any kind, the question of involvement of the lenticular region can be eliminated.

Dr. Sachs said in answer to those who are so very positive as to whether the lenticular zone was involved, that Dejerine has showed conclusively that Marie's conception of the lenticular zone is very elastic. Marie has defined it one way and he has gradually enlarged the lenticular zone so that now it practically takes in everything in the vicinity of the ganglia and extending up to the white matter. In support of what Dr. Fraenkel said relative to the man's understanding of spoken speech, Dr.

Sachs stated he did not know at what period Dr. Fraenkel saw the patient. Dr. Fraenkel replied in the beginning of February. Dr. Sachs continued then it must have been at the time he saw him too. At that time Dr. Sachs had very little doubt about his almost complete understanding of speech. He obeyed all commands, did everything he was told, in short, there was no reason to think there was any disturbance on the sensory side, he recognized objects and was able to read silently without being able to read aloud; therefore Dr. Sachs thought the statement he made correct. Dr. Sachs agreed perfectly with what Dr. Meyer said and simply insisted on the practical value of these things, and as to arguing theories of aphasia he thought the cases he reported were not suitable cases in support or opposition to the prevalent views on aphasia.

Dr. Charles E. Beevor made an address entitled: The Cerebral Arterial Distribution. Dr. Beevor illustrated his remarks with lantern slides.

DISCUSSION

Dr. M. Allen Starr thought the members were extremely indebted for the beautiful demonstration, for the pictures and the wonderful specimens Dr. Beevor showed. Dr. Starr said there were a great many points in the paper that bring forward new facts that we are not familiar with. Many of the points, especially the distribution of the vessels to the internal capsule and basal ganglia, are quite new to Dr. Starr, and he thought they would appeal to all as being a very valuable original contribution to this subject.

Dr. Patrick related a bit of gossip in relation to the subject under discussion. He said he was credibly informed that when these wonderful injections had progressed to a very considerable extent Dr. Beevor happened to be in the company of one of the learned professors of the Continent and someone present asked him to tell the professor about his injections and Dr. Beevor, in his exceedingly modest and unassuming way, started to say that he made simultaneous injections of the arteries of the brain with soluble colors. The learned professor interrupted with, "Impossible, impossible, it could not be done!" Whereupon Dr. Beevor modestly subsided, not wishing to take issue with the learned professor of the Continent, who, of course, knew much more about it than Dr. Beevor. Dr. Patrick said that the very brief presentation Dr. Beevor had given of this matter did not really impress one to the proper extent, because one can only get a sort of an idea of the extreme patience and skill, aside from the originality of the idea, which have been exercised by Dr. Beevor, when one has the opportunity to look over the whole lot of brains he has in his collection, so uniformly successful have these injections been. The uniformity of the success of his method demonstrates almost better than anything else its positive value.

Dr. Putnam asked Dr. Beevor if there were any functional significance in regard to the distribution of these different arteries.

Dr. Adolf Meyer asked whether any studies were made in regard to anastomosis between the vessels inasmuch as it is, of course, of greatest importance to know what possibilities of supply there are in case of occlusion. This question is especially suggested by the fact that the dorsal aspect of the entire optic thalamus in these injections uniformly seemed to have been attributed to the posterior cerebral distribution. He thought this relation of the anterior dorsal part of the thalamus appeared unusual while islands of softening in the posterior optic thalamus do not infrequently occur. Dr. Meyer considered Dr. Beevor's researches extremely interesting and with the addition of statements with regard to the substitutive supply, they will, no doubt, for a long time remain the most important source of pertinent information.

Dr. Joseph Collins said he would like to carry the question one stage further and ask, is there anything in Dr. Beevor's investigations which would tend to indicate the distribution of the terminal blood vessels. In sections that were being passed around Dr. Collins could not quite make that out, and he thought this would be just the matter that would put an affirmative or a negative upon that question.

Dr. Beevor, in closing the discussion, said he thanked the members of the Association for the very kind way in which they had received his paper and he also thanked Dr. Patrick and Dr. Starr for the very kind words they uttered on the subject.

In regard to the function, he did not think the distribution had anything to do with the function; so far as he can see he thinks it is purely anatomical, not functional. The fact that you can show that such a small body as the corpus subthalamicum has a double supply is against the latter idea. The question in regard to the anastomosis, of course, is a most important one. Dr. Beevor said he did not go into it in his paper, but he would be very glad to express his views on the matter as follows: In the first place, the basal arteries as described are certainly end arteries, they have no connection with their fellows; also, the basal arteries have no connection with the cortical. If you inject the basal you will find the cortical uninjected. If you inject the cortical you will find the basal uninjected. With regard to the optic thalamus there is an anastomosis between the posterior cerebral and the anterior choroid arteries. Dr. Beevor found that out in a rather interesting way when he was injecting three arteries. He tried injecting by three arteries and ligaturing the anterior choroid and the posterior communicating arteries, but he found that the injection came around by means of the posterior cerebral into the anterior choroid area, and therefore there is a communication through the choroid plexus between the posterior cerebral and the anterior choroid, so all these particular preparations came to naught, as far as the distribution of the anterior choroid was concerned. In regard to the cortex, Dr. Beevor said he can fully bear out what was shown by Duret, that there is a connection between the different systems at the periphery. If you inject the three arteries and put a clamp on the anterior cerebral you will see the middle cerebral gradually oversteps its boundaries, then if you take the clamp off the anterior cerebral, the anterior cerebral turns out the injection promptly. Each has its proper sphere. In that way, as has been said before by other authors, you can inject the whole cortex of one system. There is another point in which Dr. Beevor agrees with Duret: there is no communication, or very little, between the branches of any one system.

If you inject the middle cerebral artery and ligature one of its branches and inject the three arteries, you find that the artery which is ligatured is not supplied by its fellows of the same artery, middle cerebral, but gets it supply from the anterior cerebral. He agrees with Duret that there is no plexus, so to say, there is no free intercommunication on the cortex, that it is only on the periphery of the systems. Another point he agrees with Duret, as soon as an artery gets inside it is an end artery.

That point would be very useful in the question about aphasia, but he has not yet made any diagrams of the exact distribution. The centrum ovale is supplied from the cortex. It is quite distinct from the basal distribution. It might be useful in determining some of the points that were raised in regard to the supply to the lenticular nucleus and the white matter outside of it.

Dr. C. W. Burr, the president, thanked Dr. Beevor, in the name of the society.

Dr. H. H. Donaldson read a paper entitled: The Weight of the Brain as Influenced by Nutrition or Disease.

DISCUSSION

Dr. Putnam asked whether there were any chemical investigations carried out which would indicate on what portion of the brain substance this loss Dr. Donaldson mentioned mainly falls, whether it is the myelin or nerve element that suffers most.

Dr. B. Sachs asked whether there were any facts known showing there is a greater relative loss of brain weight than weight of other organs, whether the brain does anything more than merely participate in the general deterioration of the nutrition. He said if Dr. Donaldson had any facts of that sort he would be very glad to know about them.

Dr. E. C. Spitzka said that in the case of studies made on the brains of distinguished men by anatomical authorities allowance had been made repeatedly for a decrease in weight, through age or disease, up to as much as 150 grams.

Dr. H. H. Donaldson, in closing, said in answer to Dr. Putnam's question, the only examination that has been made of this material has been the determination of the percentage of water in the diseased or under-nourished specimens, and that shows us a slight decrease in the percentage of water under these conditions, but not enough to be at all significant. It is less than one per cent. below the percentage of water which is normal. We have at present no other data indicating the nature of the change that occurs.

As to Dr. Sachs' inquiry: the point of the investigation seems to be the following; that usually the brain is considered as unaffected by these general disturbances of the body, nevertheless a measurable variation in the weight of the brain has been demonstrated experimentally. The alteration of the brain is, of course, in percentage values much less than that of the muscles, but probably more than that of the skeleton; a comparison with other viscera has not been made. But that 5 per cent. of loss may occur in the brain, and that it should have been previously disregarded is the point.

(*To be continued.*)